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T. Yu. Bystrova [a], **V. A. Larionova** [a], **M. Osborne** [b], **A. M. Platonov** [a]
[a] Ural Federal University named after the first President of Russia B.N. Yeltsin, (Ekaterinburg, Russian Federation)
[b] University Of Glasgow (Glasgow, Scotland, United Kingdom)

INTRODUCTION OF OPEN E-LEARNING SYSTEM AS A FACTOR OF REGIONAL DEVELOPMENT[1]

The article analyses the economic and socio-cultural premises for introducing the open e-learning in the universities of the Ural region, as well as the potential economic effect of this type of educational activity. The article strives to prove a regular pattern of the universities' transition to e-learning, also in connection with the changes of the educational paradigm and the nature of the educational system management. The hypothesis of the paper is connected with bringing the economic dimension to a humanitarian concept of e-learning, which becomes more and more widespread.

The methodology of the article is based on the recognition of the fact that the macroeconomic processes in the information society and the processes occurring in a particular industry — higher education — are of isomorphic nature. On the basis of the analysis of global experience and basic theoretical approaches to e-learning, including the Lifelong Learning concept, the authors make a conclusion of the progressive growth of interest in different countries and regions. The e-learning is treated primarily as a tool to improve quality and efficiency of the educational process. The accuracy of understanding functions and peculiarities of e-learning allows one to determine a positive economic effect of its application for the university, the region, and the employers.

The article shows organisational mechanisms and financial model of implementing e-learning in the Ural Federal University. The description is made of the cost options for open-type e-learning course development, investment parameters for their establishment, as well as costs of implementing educational programmes with the application of e-learning. The analysis of the activities of Ural Federal University on implementing e-learning gives the opportunity to further imagine the effect from the introduction of e-learning in other universities in the region.

The results of the research may be applied in the institutions of secondary and higher education to help make decisions concerning the volume and form of the e-learning system.

Keywords: information society, educational paradigm, regional development, lifelong learning, e-learning, open e-learning, educational resources, massive open online course, financial model, economic effect

Introduction

The term "e-learning" appeared in the early 1990s because of the emergence of a new educational technology based on the transfer of educational content via the Internet connection, which became widespread due to the development of information technologies. In 2012, the term was introduced into the Russian legislation. The concept of e-learning "refers to the organization of educational process using the information contained in the databases and used in the implementation of the educational programmes, and information technologies and technical means that ensure processing of information, as well as information and telecommunication networks, which provide for the transmission of the said information along the communication lines, and the interaction among the participants of the educational process "[2].

As you can see, e-learning is the opposite of the traditional educational process, in which the knowledge is transmitted "by word of mouth" and skills are formed when the learner directly interacts with the teacher. When introducing e-learning, the point at issue is about creating and using electronic information and learning environment acting as a way to access the electronic educational resources, as well as about managing the learning process by means of pedagogical design tools, and interaction of the students both with the teacher and with each other. The plot is connected with the fact that the educational process involves new forms of mediated communication, which differ from traditional,

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[2] Federal Law "On Education in the Russian Federation" (#273-FZ dated December 29, 2012). Moscow: 2013.

but the social essence of the educational process as a mechanism of transferring the knowledge from generation to generation should nevertheless remain unchanged.

The openness of e-learning implies free unlimited access to an educational resource, regardless of the student's level of education, age, location, financial abilities, and formal status. The criticism of the first wide-scale open on-line courses could not cancel clear advantages of this form of learning, and the opportunities it provides for all participants of the educational process. The availability of high-quality educational content provided by the best world universities and the possibility to build individual educational trajectories on the basis of wide-scale open on-line courses (WOOC) open the prospects of continuous learning and career development of an individual throughout the whole life.

This process becomes an important factor in the development of countries and regions under the modern conditions of understanding the education as a sort of service. The article analyses social and cultural, and economic aspects of the implementation of e-learning in the context of regional development. Ural Federal University (UrFU), one of the largest universities in Russia, the leading educational and scientific centre of the Ural region, combining academic and applied science and claiming leading positions among the Russian universities and at the international educational market, is considered to be the basic entity initiating the active use of e-learning. This is declared in the Competitiveness Enhancement Program of UrFU, where among other development priorities there is a task of creating an open educational learning environment that will ensure student-oriented learning, possibility to choose individual trajectories, as well as accessibility and openness of modules of educational programmes with the use of e-learning.

E-Learning in the Context of the Information Society

The economic analysis of e-learning depends on the choice of initial methodological concepts. Today this problem is being studied in connection with the following issues: life and activity of a personality (P. Ya. Galperin [1], G.P. Zinchenko, V.A. Lektorskiy, I.V. Frolov, V.I. Bakshtanovskiy, etc.); social functions of education (M.N. Rudkevich, A.M. Kondakov [2], I. Ya. Murzina etc.), sustainable development (M.V. Kosenkova, E.S. Chernova [3]), philosophical understanding of new realities of educational process in general (N.V. Nalivayko, V.I. Panarin [4], S.I. Chernykh [5]), change the educational paradigm (S.A. Kurnosova [6]), technology development (F. Hamit), increase of investment opportunities of the region (M.V. Lezhnina), etc. The issues of the regional economics of Sverdlovsk Oblast and methodology of studying it are being discussed in the works of E.G. Animitsa [7], A.I. Tatarkin, I.S. Vazhenina etc.

As for the interpretation of the educational process, our analysis is based on the ideas about network (M. Castells [8]) and "liquid" (Z. Bauman [9]) nature of the modern economy and modern education.

Talking about the economy of a new—"informational and global"—type, M. Castells points out that competitiveness (including that of a particular region) depends primarily on the ability to produce and to process "knowledge-based" [8, p. 28]. In this regard, e-learning has no match, as the information is generated systematically, deliberately, by means of the joint efforts of the teacher and the learners (in this regard, humanitarians talk about establishing a new type of rationality, in which methods of scientific knowledge and teaching methods are identical). It is important that M. Castells emphasises: "... firms are motivated not by productivity, but by profitability, and growth of the value of their stocks. For which productivity and technology may be important means, but certainly not the only ones" [8, p. 31]. Today the shifting of priorities towards profitability can be noticed not only in the traditional economic entities but also in the universities, which had quite recently begun to be considered in the economic perspective. Higher education, functioning in the market environment of the information society, is influenced by the market, and becomes an element (more precisely, a subsystem—author's note) of the market relations [10, p. 6]. The change in the status of education and in the university education as well leads to the fact that educational services are understood as a commodity with a price, capable of withstanding competition. The complexity of the context requires that the criteria of economic efficiency and complete consideration of quality indicators be changed during the analysis.

The change of the education paradigm itself occurs alongside with the transformation of the status of education. It leaves the classical subject-object model of giving knowledge by one party of the process behind, and becomes more socially and practically oriented; interactive and design methods of teaching began playing the prominent role; the volumes of material the learner should know are increasing, and the terms for studying this material are shortened; individual educational trajectories

appear, supported by the opportunity of being academically mobile. The interpretation of Russian education as read in conjunction with global and regional components (V.I. Panarin [4]), and the understanding of risks and threats of the contemporary Russian university education [11, p. 23–31] play a particularly important role for the given research.

The information society also changes the model of a learner. It is required that the learner should be motivated to constantly continue learning (the Lifelong Learning concept, which declares the necessity and the possibility of continuous learning throughout the life), and to be able to systematically acquire new information according to the challenges they face. V.V. Serikov talks about the strengthening of the position of a learner as a subject of their own education, capable of planning content, technologies, and forms of receiving it [12, p. 27]. Any specialist should not only possess special knowledge, but also, be able to work in a team, be adaptive and stress-resistant, and have conscious goals and values.

A Brief Overview of the Global E-Learning Market

In recent years, the global market for e-learning is experiencing a rapid rise in almost all countries of the world. The foreign web portals of wide-scale open on-line courses from the leading teachers of the best world universities, which appeared on the Internet, blew up the market.

The analysis of the global market for e-learning allows to clearly identify its aspects that have an impact on the regional economy. They are:

a) e-learning as a new, rapidly growing subsystem of the household and the economy as a whole. According to [13, p. 15], in 2011 the world spent 35.6 billion dollars in the self-education using e-learning technologies, and in 2015 the volume of e-learning market will exceed 100 billion dollars;

b) e-learning as an alternative to the classical university education, which allows businesses to save up to 70 % of the staff training costs and to optimize the resources of educational institutions in the arrangement of training. The experts note that the share of classical education in the education sector fell from 70 % to 62 %;

c) e-learning as a set of products and technologies, whose production and distribution has the economic dimension. If in 2014 about 20 million listeners have taken advantage of at least one electronic course in their learning, by 2019 already more than half of the lectures will be conducted with the use of e-learning. At present, there are educational programmes in Russia and abroad, which are implemented only with the use of e-learning. This implies the dynamic expansion of the consumer audience.

The global e-learning market growth rates surpass the boldest predictions. The highest growth rates are observed in the countries of the Asian region (approximately 39 % a year — in Malaysia, 44 % a year — in Vietnam); India, China, Thailand follow immediately after (30–35 % per year); in Africa, the e-learning market growth rates exceed 15 %, while in the Middle East the growth rate is about 8 % per year. In countries with a more mature market the growth rates are not so high (a bit more than 4 % in North America, about 6 % in Western Europe), while the combined share of these markets for e-learning amounts to 70 % of the global market. The Russian market of e-learning is currently experiencing rapid growth and is the most developed one among the countries of Eastern Europe. The experts predict that by the end of 2015, the volumes of global e-learning market will have exceeded 100 billion dollars. [13, 15].

The industry of auxiliary products, cloud services, tools for creating electronic content and learning management platforms via information and educational environment is also developing at a fast pace. Here North America, where the leading companies engaged in manufacturing and supplying services are concentrated, is No.1 again. The revenue growth rates of this sector in the United States economy are two times higher than the average market ones and amount to 9 %.

The issues of developing e-learning attract not only the attention of the academic sector and business corporations, but also of state institutions. In Western Europe national virtual universities were established with state administrative and financial support (Switzerland, Sweden, Finland, Norway, Estonia, and Bulgaria). Bavaria's experience, where the virtual university was established at the regional level with the account of regional particularities, is also interesting. This positive experience may be replicated in other regions.

The Lifelong Learning concept that was formulated by the European Union in 2007 and received worldwide recognition deserves close attention. In 2007–2013 7 billion dollars have been allocated for the implementation of the concept, and today it is prolonged till 2020. The Lifelong Learning concept implies creating opportunities for lifelong learning throughout the whole life, and hence, the

possibility of flexible professional trajectories of specialists in accordance with the changing needs of the market [14].

The value of e-learning in this process cannot be overstated, because improving professional skills or mastering additional competencies can be effective with the use of simulators, short-term programmes, specialized courses, without moving anywhere or changing the job schedule. It is no less important that the teacher should be able to evoke the learners' interest and motivate them, and that can also be done using interactive e-learning technologies.

Despite the global recession, which arose due to the economic crisis, the demand for e-learning on the part of the business is growing every year. According to IBIS Capital,[3] about 40 % of the working population in Spain and more than 50 % in the UK use e-learning for professional development. In France and Italy, this figure is much lower, probably due to linguistic preferences and social and cultural features of these countries.

On the basis of the studies of the e-learning efficiency the IBM company has shown that every dollar a business spent on e-learning can bring 30 dollars of profit, while the time spent by the employee on training, is reduced by 25–60 %, and the efficiency of training is increased by 25–60 %, as compared to traditional forms of education. Thus, e-learning is not only less expensive, but also more efficient. It justifies the consideration of all aspects of e-learning that influence the development of the region.

E-Learning as a Tool to Improve Quality and Efficiency of the Educational Process

As defined above, e-learning involves a completely asynchronous educational process with the use of electronic information and learning environment that includes electronic information and educational resources, as well as a combination of information technologies, telecommunication technologies and appropriate technological tools. This environment should ensure mastering educational programmes or their parts by means of the learners' independent work with databases and interaction of the learners with each other, as well as with pedagogical, auxiliary educational, and administrative staff.

The essential condition for e-learning is the availability of the e-learning course, which is methodically justified the educational system, enabling the learners to acquire full-fledged knowledge and skills, and to achieve the planned learning outcomes. The structure of the learning process and regular monitoring of the level of achieving the results are important elements of the e-learning course. In this sense, the e-learning course is the original learning technology, and its efficiency is determined not only and not just by the quality of content, but by the "hidden" methods of teaching via electronic educational environment.

We think that the most relevant e-learning components that determine its efficiency are the following:

— methodically justified presentation of the electronic content with the account of Kolb's learning styles [15, p. 195];

— use of interactive learning elements;

— control of the learning outcomes and detection of errors throughout the course;

— arranging for the learners' interaction while studying the course;

— computer-assisted checking of class and test assignments;

— providing support for the learners in the learning process and motivating them for the achievement of high results;

— possibility of making immediate changes and additions to the e-learning course if necessary;

— arrangement of on-line project-based learning;

— getting feedback from the learners and its statistical processing.

Due to the fact that it uses the services of electronic information and learning environment, the e-learning course provides for the function of managing the learning process, and under the certain conditions may be applied for the learning without the direct involvement of the teacher in the process of working with every learner. The main function of the teacher is shifted to the area of creating the e-learning course, and its implementation stage may, as a rule, be accompanied by the tutors.

One more difference in implementing the e-learning course is the clear recording of the fact of its implementation in the process of teaching a particular learner (student) by means of registering such a learner to the course using the unique account. This allows to easily track the fact when the learning

[3] Available at: http://www.siblinggroup.com/wp-content/uploads/2014/01/IBIS-Capital-e-Learning-Lessons-for-the-Future.pdf.

process begins, to get the learner's feedback regarding quality and relevance of the course, to record the learning results, and to create an electronic portfolio for the learner.

The implementation of e-learning in the university pursues the following objectives, whose achievement has social orientation and economic dimension.

For the region they are:

— to provide the availability of professional education within the implementation of the state programme "Education Development, 2013–2020";

— to satisfy the educational needs of socially disadvantaged groups of people and people with limited mobility;

— to strengthen and to preserve the human resources within the region.

— to improve quality and efficiency of education.

For the university they are:

— to reduce the expenditures of an educational institution as a result of the education availability;

— to solve the problem of the lack of classrooms and places in the student hostels;

— to increase the degree of flexibility for the educational content, as well as for the forms and ways of interaction between the teacher and the learners; to increase the variability of ways of delivering it; to provide for the opportunity to quickly take into account the employers' interests (see [16, c. 14–16]);

— to provide for the opportunity to attract the teachers of authority to the distant learning;

— to provide for the choice of individual trajectories of educating the learners;

— to release the time of the academic staff for their self-development, scientific activity and improvement of the educational process;

— to expand the geography of the learners (students) and to provide for the increase of the students from foreign states;

— to broaden the spectrum of educational programmes necessary in the market, due to the development of e-learning courses together with business companies;

— to provide for the opportunity for the educational services to enter the international market; to increase the competitiveness.

For business they are:

— to provide for the continuous work-based learning of staff (Lifelong Learning) according to the individual academic schedule;

— to provide for substantial reduction of costs for improving the qualification of the company's employees (cost of education, travel costs, losses due to the employee's being out of service for the time of learning);

— to provide for the employer's monitoring the learning outcomes due to the access to the learner's electronic portfolio;

— to provide for the target preparation of the specialists possessing the necessary competencies;

— to provide for the opportunity to select human resources on the basis of ranking the learners studying at the open e-learning courses.

Of course, the implementation of e-learning into the universities requires a dramatic reconstruction of the management structure of the university, as well as its approaches to the organisation of educational activity. It also requires the reconsideration of development priorities and systematic principles of changes, and strategic visions and actions on the part of the university management, pursuing a pre-emptive tactic.

Ural Federal University is one of the leading universities of Russia as per the innovative transformation and modernization of the educational process. The existing base and the huge experience in the implementation of remote educational programmes, as well as the state financial support of the innovative processes of development and competitiveness enhancement programmes within the university allowed to solve part of the problems connected with the logistics support of the educational process, the creation of electronic information and learning environment, the improvement of the teacher's competencies in the area of information and communication technologies and the creation and development of pilot e-learning courses.

This is just a beginning of the way of complex innovative reconstruction of the educational process. It is necessary to carry out a kind of breakthrough towards the modernization of the educational process, the implementation of e-learning, and the improvement of the quality of education, in order to achieve the objectives formulated in the Competitiveness Enhancement Program of UrFU.

Financial Model of E-Learning

Let us consider some financial aspects of how the open e-learning system functions on the basis of Ural Federal University. One of the main peculiarities of e-learning is rather a high barrier to entry for launching the system. It is stipulated not only by logistic problems of functioning of the platform for uploading the e-learning courses and managing the learning process, but also by organisational and methodological issues of creating e-learning courses, which requires putting lots of efforts on the part of copywriters, e-learning methodologists, and technical specialists. In addition, considerable investments are necessary at the stage of creating e-learning courses, these investments being in the form of complete or partial reimbursement of efforts of the authors and payment for the services of specialists.

The cost of developing the e-learning course is defined on the basis of actual working hours of the authors while creating academic support and developing information system and software. In the process of defining the labour expenditures due account is taken of the following: the volume of e-learning course and the amount of interactive components, as well as of the degree of automation of intermediate and final assessment; the depth of study of methodological support and originality of instructional design; the level of complexity in preparation of training and test materials, including virtual labs and project assignments, and other parameters. The cost of works on developing methodological support varies from tens of thousands of roubles for the simplest of network resources up to 1 million roubles and more for complex software simulators of professional activity.

These developments may be financed, whether completely or partially, from various sources: by means of the funds from the state programmes for development of education and enhancement of the competitiveness of the universities, by means of the development funds and extra-budgetary resources of the universities, having been attracted due to introducing e-learning into the implementation of programmes of higher and supplementary professional education. Businesses and private individuals, various platforms of open education, interested in creating specific courses may also act as investors. The authors may develop the course on their own initiative without attracting any external sources.

The decision to finance the creation of a particular e-learning course should be taken in the context of projects having target values in the area of regional development and enhancement of the competitiveness of the university, with the account of the returns on investment due to future sales of educational products and services [17, p. 148–149]. In determining the cost of the course development account should be taken of the much higher cost of developing the courses for technical training areas, where virtual laboratories and individual and collective project assignments are applied.

The returns on investment are made from extra-budgetary funds obtained by the university from the free market sales of educational services implemented using e-learning courses. The cost of e-learning course depends on its being in demand, development cost, estimated payback periods and prevailing market prices of similar educational services.

In contrast, to the closed e-learning courses, accessible only after paying for the educational service, the access to open on-line courses on the university web portal is free, and anyone can study these courses free of charge. The payment occurs when a learner requests a formal confirmation of the learning outcomes with a special certificate of successful completion of the course passing final examination and with the obligatory evidence of the learner's identity. The share of learners that paid for the open e-learning course depends on the conformity of the content of the course to the compulsory modules (subjects) of the main educational programmes of certain areas of training and to the correlation of the e-learning course learning outcomes with the requirements for the learning outcomes referred to in these programmes.

Despite the fact that an open course is of wide scale, it should be assumed that the share of people who paid for the course, will be much lower than the number of people registered for the course. It is assumed that the basic revenue from the open courses will be determined by the total number of the learners studying at other universities in the network implementation of basic educational programmes via a national platform of open education. This means that the partner university will act as a payer [18, p. 147]. Increased profitability is also expected from using e-learning courses in supplementary professional development educational programmes and professional retraining programmes for the specialists of the real economy.

Assessment of the cost of an open course should be based upon the requirements of the initial investment return in terms of exchange rate (I) within the normative period of time (T). The cost is

calculated using the model of discounted cash flows and rent (fixed) income from the sales of the open course with its gradual reaching the planned level of sales (N learners per year) within the first two years. The rate of the project return, cleared of inflation, within the range of 3 % < r < 5 % is enshrined in the calculation. The share of revenue (d), which is to cover the investment into the development of the course, is calculated from the difference between the amount of money obtained from the sale of educational services and the amount of fixed and variable costs incurred by the university possessing the course and providing the platform of open education during the provision of services (the calculation of d is shown below).

In the suggested model, the cost of an open course for implementing in within the market of open education is calculated by the formula (1):

$$C = \frac{I}{d \cdot N}\left[\frac{4 \cdot r \cdot (1+r)^2}{r^2 + 3r - 4(1+r)^{(2-T)} + 4}\right]. \quad (1)$$

Figure 1 shows a dependency graph of the cost of two open courses with the same initial investment volume I equal to 200,000 roubles, payback period equal to 5 years, and different degrees of return on investments from the profits. Thus, when the number of students is equal to 200 people a year, the cost of the course varies from 1,200 up to 3,000 roubles. If the number of users is doubled, the cost of the course can be reduced by about half, or the investment payback period may be reduced while maintaining the cost at the level of average market prices for similar types of educational services. If we compare the resulting cost of e-learning with the average costs of training staff in Russian companies, which, according to the company "Malakut HR-Research and Solutions"[4], amounted to 11,200 roubles per employee in 2013, and take into account the fact that the growth of this value due to the economic crisis was not planned, we will see real cost cutting of more than 70 %.

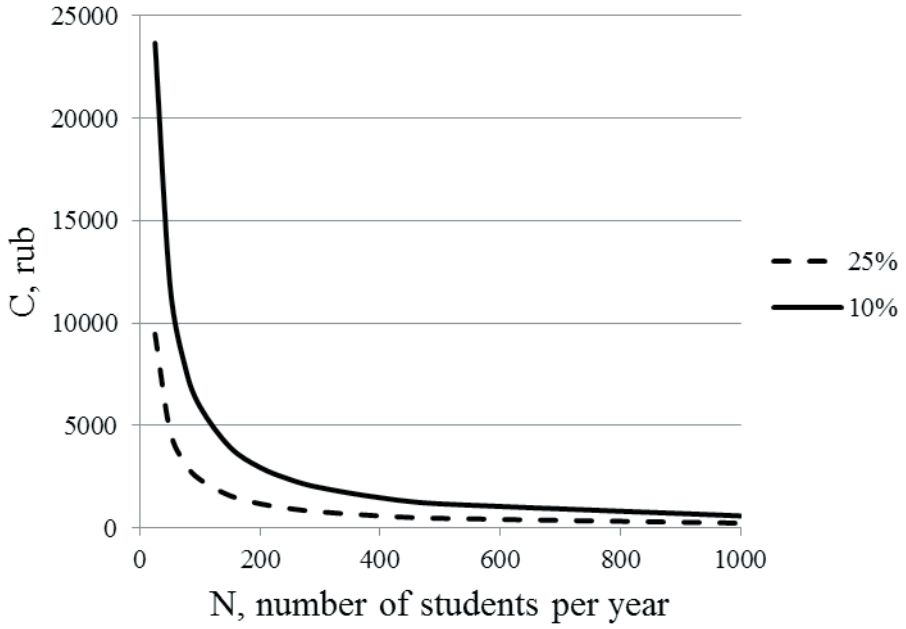

Fig. 1. *Dependence of the cost of e-learning course on the number of learners per year for various shares in the amount of return on investment in the profits*

The analysis of the cost of e-learning course as a function of the volume of investment, payback periods, and the planned group of learners can serve as a basis for making a decision to invest money in the creation of the course. If the resulting cost turns out to be considerably higher than the market prices of similar educational services, the probability of return on investment within a specified time will be low, and vice versa. The model allows us to estimate the real payback period of investment in the development of the course under the actual cost of the e-learning course using the formula (2):

[4] Available at: http://www.vedomosti.ru/newspaper/articles/2014/05/21/uchatsya-na-malyh-oborotah.

$$DPB = 2 - \frac{\ln\left\{1 - \frac{I \cdot (1+r)^2 r}{C_{mark} \cdot N \cdot d} + \frac{(3+r) \cdot r}{4}\right\}}{\ln(1+r)}. \quad (2)$$

Figure 2 shows the results of calculating the payback period for the e-learning course worth 2,000 roubles. 200,000 roubles were spent for its creation and 20 % of the revenue, obtained from selling the course, is used to cover the investment costs. The minimum rate of the project return, equal to 3 %, is enshrined in the calculation.

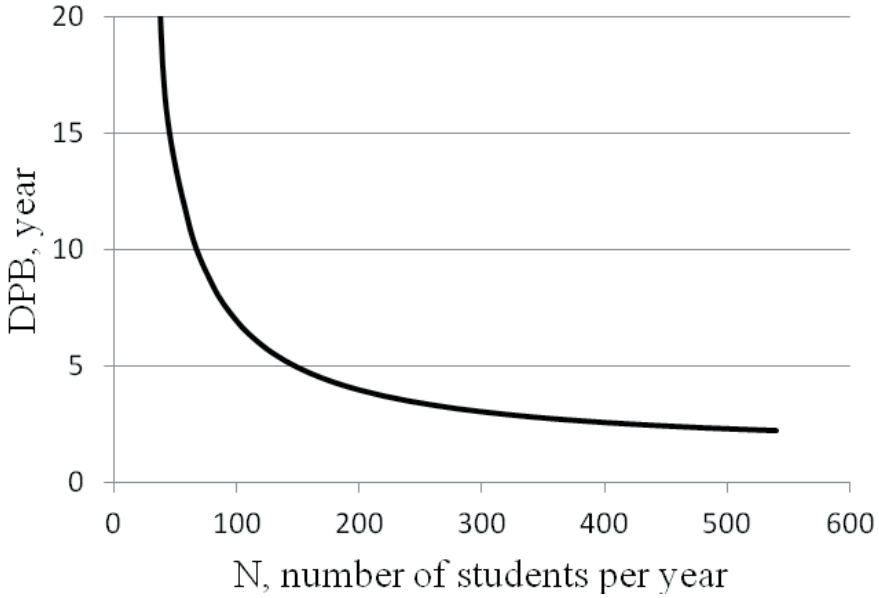

Fig. 2. *Example of calculating the investment payback period in the creation of e-learning course depending on the number of learners per year at d = 20 %, r = 3 % and I / Cmark = 100*

As seen in Figure 2, the payback period becomes more than 10 years with a number of learners of at least 70 people a year, and that is the evidence of the fact that it is not feasible to invest into the given course, unless this is a unique course, created for training the specialists as per the order of the business and with the attraction of private investments. The final cost of the open course should be set based on the market situation, with the account of the competitive advantages of the developed e-learning course and the prospects of promoting it in the market.

The basic costs in the implementation of educational programmes with the use of e-learning include the following:

— payment for the services of the provider of an open platform for e-learning courses for uploading the course there and administering the platform;

— remuneration paid to the group of authors, including royalties for using the course, and payment for the work to update and improve the content of the course, with the account of the social costs;

— costs of tutor and technical support of the course (if the intermediate and final examinations are automated, these costs are minimal);

— payment for the work of teacher or assessor to conduct on-line consultations, to check the learner's assignments, etc. if these kinds of work are provided for in the course;

— payment of the general organizational costs of legal and methodological support of the educational process on the part of the university;

— remaining share of the revenue (*d*) goes to cover the investment costs and is distributed in accordance with the structure of investment in the creation of the course. If the course is an initiative development of the author and has not been funded from any sources, these funds shall be paid to the author or the team additionally. This is a powerful motivation tool for the academic staff to create e-learning courses and to implement e-learning into the educational process. The share of the author's remuneration may reach 50 % of revenues when the initiative course recommended to be used only in e-learning is implemented on the web portal of open education.

The demand for the e-learning course in the educational market plays a decisive role in the efficiency of investment in the creation of the course and the authors' motivation to further develop

and implement e-learning. The anticipated revenue of the developers of e-learning courses showed that a change in the academic load of teachers towards tracking e-learning and refusal from the classroom work results in the fact that the teacher's incomes fall, because the remuneration does not cover the reduction of salary by decreasing the share of pay rate or hourly pay. That is why at the initial stage of e-learning development at the university it is feasible to recognize the teacher's academic load in the e-learning as equivalent to the teacher's load in classroom work. This will allow to overcome barriers to the implementation of e-learning and to increase the motivation of the academic staff.

It is necessary to increase revenues from sales of the course at the web portal of the open university to restore the balance, and the number of students should be much higher, given that no more than 10 % of all those registered to the course complete the training and receive a certificate confirming the learning outcomes.

In this regard, the idea of creating a National open education platform in Russia is interesting. This idea implies the establishment of network educational programmes by means of using of e-learning courses, located on the web portal, in the educational programmes of other universities. This will allow to increase the number of learners studying the qualified electronic courses that were recommended to be used in the basic education programmes of the expanded groups of the areas of training. The supplementary professional education programmes (SPE) using the developed e-learning courses may serve as an additional source of income. In this case, the curve of accumulated income from the use of e-learning starts to grow faster and significantly exceeds the level of the teacher's income in the traditional education.

In terms of intellectual potential management within the region, open e-learning is an effective tool for implementing human resources policies, continuous professional training for key production facilities and related industries, and ensuring the regional needs in the workforce having the necessary skills. Unlike the system of higher education, it is a more flexible tool that faster responses to the market needs and allows the university to accumulate on its informational and educational platform not only the most advanced and up-to-date knowledge and innovative developments in the form of special e-learning courses created for specific business needs, but also the basic modules of the basic educational programmes of higher education. This can only be done in close collaboration between the universities and business on the basis of mutually beneficial cooperation, provided that the process of creating these courses will be co-financed. This will allow the universities update their educational programmes by including the given courses in the elective part of the programmes, and the business will be able to ensure continuous training of staff and to significantly reduce the staff training costs.

Conclusion

The analysis of the economic parameters of implementing the e-learning system in the universities reveals the following:

— the global e-learning market progresses; e-learning is an educational technology, naturally occurring within the information society and the new educational paradigm. This technology is aimed at strengthening the process of education, giving it greater flexibility and suitability, enhancing interactivity during the assimilation of knowledge, and relevance of learning throughout the whole life;

— Russia's participation in the process of formation of open e-learning courses is rapidly expanding, which becomes an important factor in the competitiveness of the universities;

— problems of e-learning in a particular university and in a particular region cannot be efficiently solved without a comprehensive study of their economic, and social and cultural situation;

— the financial model of the open e-learning course should take into account the initial investment into the creation of the course and the anticipation of the demand for the course within the market, as well as the structure of the maintenance costs required for e-learning;

— the distribution of technologies in the information society makes the experience of implementing e-learning in a particular university and a particular region representative for other Russian regions;

— the introduction of an open e-learning system contributes to the development of the intellectual potential of the region and increases its competitive advantages, providing continuity, accessibility, transparency and efficiency of the education.

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Authors

Bystrova Tatiana Yuryevna — Doctor of Philosophy, Professor of the Academic Department of Cultural Studies and Design, Institute of Humanities and Arts, Ural Federal University named after the first President of Russia B. N. Yeltsin (19, Mira St., Ekaterinburg, 620002, Russian Federation; e-mail: taby27@yandex.ru).

Larionova Viola Anatoylevna — PhD in Physics and Mathematics, Associate Professor, Academic Department of Economics and Management in Construction and Real Estate Market, Graduate School of Economics and Management,Ural Federal University named after the first President of Russia B. N. Yeltsin (19, Mira St., Ekaterinburg, 620002, Russian Federation; e-mail: viola-larionova@yandex.ru).

Osborne Michael — Doctor, Professor, Chair of Adult and Lifelong Education of the School of Education, University of Glasgow; Director, Centre for Research and Development in Adult and Lifelong Learning within the Faculty of Education; Co-director of the Observatory on the PASCAL Place Management, Social Capital and Lifelong Learning (St Andrew's Building, 11, Eldon St., Glasgow, G3 6NH, United Kingdom; e-mail:michael.osborne@glasgow.ac.uk).

Platonov Anatoly Mikhaylovich — Doctor of Economics, Professor of the Academic Department of Economics and Management in Construction and Real Estate Market, Graduate School of Economics and Management, Ural Federal University named after the first President of Russia B. N. Yeltsin (19, Mira, St., Ekaterinburg, 620002, Russian Federation; e-mail: a.m.platonov@urfu.ru).